Natural Heritage & Endangered Species Program
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Forcipate Emerald Dragonfly

Somatochlora forcipata

State Status: **Special Concern**
Federal Status: None

DESCRIPTION: The Forcipate Emerald (*Somatochlora forcipata*) is a large, slender insect of the order Odonata, suborder Anisoptera (the dragonflies), family Corduliidae (the emeralds). Most emeralds of the genus *Somatochlora* are large and dark with at least some iridescent green coloration, brilliant green eyes in the mature adults (brown in young individuals), and moderate pubescence (hairiness), especially on the thorax. The Forcipate Emerald has thoracic markings consisting of two lateral yellow ovals, the front one more elongate, on each side of the thorax. The thorax overall is of a bronzy brown color with metallic green highlights throughout. The face is yellow, with the forehead (frons) a dark brown with a hint of metallic green. The large eyes, which meet at a seam on the top of the head, are brilliant green in mature adults. The long and slender abdomen, black with a dull metallic green luster, is most narrow at the base, with a yellow lateral spot on segment 2, a pale basal ring on segment 3, and dull yellowish lateral spots on segments 5-7 and occasionally 8 (dragonflies and damselflies have 10 abdominal segments). The wings of this species are clear and, as in all dragonflies and damselflies, are supported by a dense system of dark veins.

Adult Forcipate Emeralds range from 1.7 to 2 inches (43 to 51 mm) in length. Females are stockier and have a pale yellow ovipositor.

SIMILAR SPECIES: Forcipate Emeralds are distinguished from other species of the genus *Somatochlora* in Massachusetts by the thoracic markings and by the shape of the terminal appendages (part of the reproductive structures). The shape of the male terminal abdominal appendages (as shown in Walker and Corbet (1975), Needham *et al.* (2000), and Nikula *et al.* (2003)) and the females large triangle-shaped vulvar lamina (as shown in Walker and Corbet (1975) and Needham *et al.* (2000)) are the best way to definitively determine this and many species of dragonflies. A magnifying lens or microscope is needed to observe characters of these structures.

The nymphs can be distinguished by characteristics of the tibia and femora and by the size and shape of the lateral spines on the abdomen as per the keys in Needham *et al.* (2000) and Soltesz (1996).

HABITAT: The Forcipate Emerald inhabits pools in bogs and small forested streams.

LIFE-HISTORY/BEHAVIOR: This species flies from early June through early August.

Although little has been published about the life cycle of the Forcipate Emerald in particular, information documented for other species is most likely applicable. Like damselflies, dragonflies have two distinct life stages: an aquatic larval stage (nymph) and the flying adult.

FORCIPATE EMERALD FLIGHT PERIOD

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

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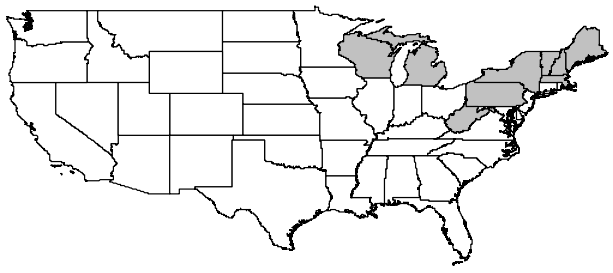
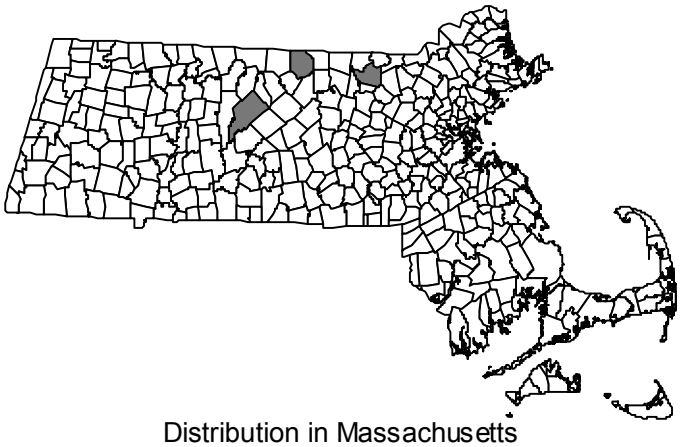
Dragonfly nymphs are voracious predators, feeding on just about any animal of appropriate size, including a wide variety of aquatic insects, small fish, and tadpoles. Nymphs undergo several molts until the final stage of development, the emergence from the nymph to adult stage. The nymph of the Forcipate Emerald crawls up onto emergent vegetation, exposed banks, or tree trunks when it is ready to transform into an adult. When the nymph reaches a secure substrate, the adult begins to push itself out, head and thorax first and then abdomen. Immediately following emergence the adult is very compacted, especially the wings and abdomen. As soon as the abdomen and wings are fully expanded, the adult takes its first flight. This maiden flight usually carries the individuals up into surrounding forest or other areas away from water, where they spend several days maturing and feeding. Forcipate Emeralds can be found in fields and forest clearings which they patrol in search of small aerial insects, such as flies and mosquitoes, on which they feed. When not feeding, Forcipate Emeralds rest hanging vertically from the branches of bushes and trees. The adult coloration is acquired and the dragonfly becomes sexually mature before returning to the breeding habitat to initiate mating. Breeding in Massachusetts probably occurs from early June through August. Males patrol up and down the stream along the banks, usually no more than two feet above the surface of the water, in search of females. The joined pair quickly flies off into the surrounding upland habitat to mate. Following mating, oviposition (egg laying) occurs. Females of the genus *Somatochlora* oviposit alone and deposit their eggs directly into the substrate by tapping the tip of the abdomen on its surface. Forcipate Emerald females have been observed ovipositing by tapping the tip of their abdomen into pockets of water along the streambank.

RANGE: The Forcipate Emerald is found across Canada into Michigan, Minnesota, and Maine south to West Virginia. In New England, this species is found in Maine, New Hampshire, Vermont, and Massachusetts.

POPULATION STATUS IN MASSACHUSETTS: The Forcipate Emerald is listed as a Species of Special Concern in Massachusetts. As with all species listed in Massachusetts, individuals of the species are protected from take (picking, collecting, killing, etc…) and sale under the Massachusetts Endangered Species Act.



Range of Species in US



Distribution in Massachusetts
1977 - 2002
Based on records in Natural Heritage Database

MANAGEMENT RECOMMENDATIONS: As for many rare species, exact needs for management of the Forcipate Emerald are not known. As an inhabitant of streams and bogs, Forcipate Emerald is vulnerable to habitat alteration such as damming and altering of flowage, along with many other aquatic impacts such as chemical pollution and salt run-off from roadways. Bogs are very sensitive habitats, and can be impacted by trampling. Overuse of streams for recreation (fishing, swimming, etc.) could cause problems if left unchecked. Such activities should be monitored and controlled if necessary. Another important part of preserving this and other species of dragonflies is the maintenance of suitable upland habitat that is essential for the life cycle of Forcipate Emerald and other dragonflies. Dragonflies need natural uplands in which to mature and feed before returning to wetlands to breed.

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Walker, E. M. and P. S. Corbet. 1975. The Odonata of Canada and Alaska, Vol. III. University of Toronto Press.

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Updated May 2003